

IN THE CLAIMS:

Please cancel claims 17 and 18 without prejudice or disclaimer.

Please replace claims 1-13 and 17-19 with the following:

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Gn4

1. (Amended) A nitride semiconductor light emitting device comprising:

an active layer formed of a GaN family compound semiconductor;

multi-quantum barrier layers formed by repeatedly depositing a double layer consisting of an $\text{Al}_x\text{Ga}_{1-x}\text{N}$ layer and a GaN layer at least two times, at either the upper or lower side of the active layer, by which an energy band has a multi-quantum barrier structure, wherein $0 < x < 1$;

a first light waveguide layer and a second light waveguide layer; and

a first cladding layer and a second cladding layer,

wherein the active layer and the multi-quantum barrier layers are disposed between the first and second light waveguide layers, and

wherein the first and second light waveguide layers are disposed between the first and second cladding layers.

2. (Amended) The nitride semiconductor light emitting device of claim 1, wherein the first and second light waveguide layers are GaN light waveguide layers.

3. (Amended) The nitride semiconductor light emitting device of claim 1, wherein the active layer is formed by depositing a double layer consisting of an $\text{In}_x\text{Ga}_{1-x}\text{N}$ layer and an $\text{Al}_y\text{Ga}_{1-y}\text{N}$ layer, a double layer consisting of an $\text{In}_x\text{Ga}_{1-x}\text{N}$ layer and an

$\text{In}_y\text{Al}_z\text{Ga}_{1-y-z}\text{N}$ layer, a double layer consisting of an $\text{In}_x\text{As}_y\text{Ga}_{1-x-y}\text{N}$ layer and $\text{In}_z\text{Ga}_{1-z}\text{N}$ layer or a double layer consisting of an $\text{In}_x\text{As}_y\text{Ga}_{1-x-y}\text{N}$ layer and an $\text{Al}_y\text{Ga}_{1-y}\text{N}$ layer a predetermined number of times to form a multi-quantum well structure, and

wherein $0 \leq x \leq 1$, $0 \leq y < 1$, $0 \leq z < 1$, $x + y < 1$ and $y + z < 1$.

4. (Amended) A nitride semiconductor light emitting device comprising:

an active layer formed of a GaN family compound semiconductor;

multi-quantum barrier layers formed by repeatedly depositing a double layer consisting of an $\text{Al}_x\text{Ga}_{1-x}\text{N}$ layer and an $\text{Al}_y\text{Ga}_{1-y}\text{N}$ layer at least two times, at either the upper or lower side of the active layer, by which an energy band has a multi-quantum barrier structure, wherein $0 < x < 1$, $0 \leq y < 1$, and $x > y$;

a first light waveguide layer and a second light waveguide layer; and

a first cladding layer and a second cladding layer,

wherein the active layer and the multi-quantum barrier layers are disposed between the first and second light waveguide layers, and

wherein the first and second light waveguide layers are disposed between the first and second cladding layers.

5. (Amended) A nitride semiconductor light emitting device comprising:

an active layer formed of a GaN family compound semiconductor; and

multi-quantum barrier layers formed by repeatedly depositing a double layer consisting of an $\text{Al}_x\text{Ga}_{1-x}\text{N}$ layer and an $\text{Al}_y\text{Ga}_{1-y}\text{N}$ layer at least two times, at either the upper or lower side of the active layer, by which an energy band has a multi-quantum barrier structure, wherein $0 < x < 1$, $0 \leq y < 1$, and $x > y$,

wherein the thicknesses of the $\text{Al}_x\text{Ga}_{1-x}\text{N}$ layers of the double layers differ from each other, thereby making energy levels of the multi-quantum barrier layers differ from each other.

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GaN
6. (Amended) A nitride semiconductor light emitting device comprising:

an active layer formed of a GaN family compound semiconductor; and

multi-quantum barrier layers formed by repeatedly depositing a double layer consisting of an $\text{Al}_x\text{Ga}_{1-x}\text{N}$ layer and an $\text{Al}_y\text{Ga}_{1-y}\text{N}$ layer at least two times, at either the upper or lower side of the active layer, by which an energy band has a multi-quantum barrier structure, wherein $0 < x < 1$, $0 \leq y < 1$, and $x > y$,

wherein the thicknesses of the $\text{Al}_y\text{Ga}_{1-y}\text{N}$ layers of the double layers differ from each other, thereby making energy levels of the multi-quantum barrier layers differ from each other.

7. (Amended) A nitride semiconductor light emitting device comprising:

an active layer formed of a GaN family compound semiconductor; and

multi-quantum barrier layers formed by repeatedly depositing a double layer consisting of an $\text{Al}_x\text{Ga}_{1-x}\text{N}$ layer and an $\text{Al}_y\text{Ga}_{1-y}\text{N}$ layer at least two times, at either the

upper or lower side of the active layer, by which an energy band has a multi-quantum barrier structure, wherein $0 < x < 1$, $0 \leq y < 1$, and $x > y$,

wherein the values of x for the $\text{Al}_x\text{Ga}_{1-x}\text{N}$ layers of the double layers differ from each other, thereby making energy levels of the multi-quantum barrier layers differ from each other.

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Gut

8. (Amended) A nitride semiconductor light emitting device comprising:
an active layer formed of a GaN family compound semiconductor;
multi-quantum barrier layers formed by repeatedly depositing a double layer consisting of an $\text{Al}_x\text{Ga}_{1-x}\text{N}$ layer and an $\text{In}_y\text{Ga}_{1-y}\text{N}$ layer at least two times, at either the upper or lower side of the active layer, by which an energy band has a multi-quantum barrier structure, wherein $0 < x < 1$ and $0 < y \leq 1$;
a first light waveguide layer and a second light waveguide layer; and
a first cladding layer and a second cladding layer,
wherein the active layer and the multi-quantum barrier layers are disposed between the first and second light waveguide layers, and
wherein the first and second light waveguide layers are disposed between the first and second cladding layers.

9. (Amended) A nitride semiconductor light emitting device comprising:

an active layer formed of a GaN family compound semiconductor; and

multi-quantum barrier layers formed by repeatedly depositing a double layer consisting of an $\text{Al}_x\text{Ga}_{1-x}\text{N}$ layer and an $\text{In}_y\text{Ga}_{1-y}\text{N}$ layer at least two times, at either the upper or lower side of the active layer, by which an energy band has a multi-quantum barrier structure, wherein $0 < x < 1$ and $0 < y \leq 1$,

wherein the thicknesses of the $\text{Al}_x\text{Ga}_{1-x}\text{N}$ layers of the double layers differ from each other, thereby making energy levels of the multi-quantum barrier layers differ from each other.

10. (Amended) A nitride semiconductor light emitting device comprising:

an active layer formed of a GaN family compound semiconductor; and

multi-quantum barrier layers formed by repeatedly depositing a double layer consisting of an $\text{Al}_x\text{Ga}_{1-x}\text{N}$ layer and an $\text{In}_y\text{Ga}_{1-y}\text{N}$ layer at least two times, at either the upper or lower side of the active layer, by which an energy band has a multi-quantum barrier structure, wherein $0 < x < 1$ and $0 < y \leq 1$,

wherein the thicknesses of the $\text{In}_y\text{Ga}_{1-y}\text{N}$ layers of the double layers differ from each other, thereby making energy levels of the multi-quantum barrier layers differ from each other.

11. (Amended) A nitride semiconductor light emitting device comprising:

an active layer formed of a GaN family compound semiconductor; and

multi-quantum barrier layers formed by repeatedly depositing a double layer consisting of an $\text{Al}_x\text{Ga}_{1-x}\text{N}$ layer and an $\text{In}_y\text{Ga}_{1-y}\text{N}$ layer at least two times, at either the upper or lower side of the active layer, by which an energy band has a multi-quantum barrier structure, wherein $0 < x < 1$ and $0 < y \leq 1$,

wherein the values of x for the $\text{Al}_x\text{Ga}_{1-x}\text{N}$ layers of the double layers differ from each other, thereby making the energy levels of the multi-quantum barrier layers differ from each other.

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12. (Amended) A nitride semiconductor light emitting device comprising:
- a substrate;
 - an active layer formed on the substrate, in which light emission occurs;
 - an n-type material layer for generating a laser beam, the n-type material layer being formed between the substrate and the active layer and which includes an n-type clad layer for preventing light loss in the direction of installation of the substrate;
 - a carrier blocking layer, a p-type waveguide layer and a p-type compound semiconductor layer which are sequentially deposited on the active layer; and
 - a first electrode and a second electrode generating a potential difference for diffusion of electrons to the active layer,
- wherein the carrier blocking layer is a multi-quantum barrier layer,
- wherein the multi-quantum barrier layer consists of double layers of an $\text{Al}_x\text{Ga}_{1-x}\text{N}$ layer and an $\text{In}_y\text{Ga}_{1-y}\text{N}$ layer ($0 < x < 1$, $0 < y \leq 1$), and

wherein the thicknesses of the $\text{In}_y\text{Ga}_{1-y}\text{N}$ layers of the double layers differ from each other, thereby making energy levels of the multi-quantum barrier layer differ from each other.

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13. (Amended) The nitride semiconductor light emitting device of claim 12,
wherein the n-type material layer comprises:

an n-type waveguide layer formed between the n-type clad layer and the active layer; and

an n-type compound semiconductor layer formed between the n-type clad layer and the substrate and connected to the first electrode.

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Amid
19. (Amended) A nitride semiconductor light emitting device comprising:
a substrate;
an active layer formed on the substrate, in which light emission occurs;
an n-type material layer for generating a laser beam, the n-type material layer being formed between the substrate and the active layer and which includes an n-type clad layer for preventing light loss in the direction of installation of the substrate;
a carrier blocking layer, a p-type waveguide layer and a p-type compound semiconductor layer which are sequentially deposited on the active layer; and
a first electrode and a second electrode generating a potential difference for diffusion of electrons to the active layer,

wherein the carrier blocking layer is a multi-quantum barrier layer, and

wherein the multi-quantum barrier layer consists of a plurality of double layers of an $\text{Al}_x\text{Ga}_{1-x}\text{N}$ layer and an $\text{In}_y\text{Ga}_{1-y}\text{N}$ layer ($0 < x < 1$, $0 < y \leq 1$) and wherein the values of x for the $\text{Al}_x\text{Ga}_{1-x}\text{N}$ layers of the double layers differ from each other, thereby making energy levels of the multi-quantum barrier layer differ from each other.

20. (Amended) The nitride semiconductor light emitting device of claim 12, wherein the p-type waveguide layer and the p-type compound semiconductor layer are the same material layer, wherein the doping concentration of the p-type compound semiconductor layer is higher than that of the p-type waveguide layer.
